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<b>To:</b>	Mr. Joe Mahoney, Colorado Department of Transportation		
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<b>Phone:</b>	720-475-7079	<b>Date:</b>	5/10/2015
<b>Ref:</b>	Tolling Advisory Services	<b>cc:</b>	Rami Harb
<b>Subject:</b>	I-70 PPSL Toll Rates MEMO		

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## 1. Document Purpose

The Louis Berger team conducted a level I Traffic and Revenue Study for the I-70 Peak Period Shoulder Lane (I-70 PPSL). In addition, they elicited the value of time based on the US-36 stated preference survey conducted by CDM Smith. FHU conducted a traffic volume study and analyzed the value of time while taking into account the average occupancy of vehicles on the PPSL. Atkins has been tasked with setting toll rates on the PPSL based on the abovementioned studies.

## 2. Project Limits

The section of I-70 between the Eisenhower-Johnson Memorial Tunnel (EJMT) and the Denver Metro Area experiences recurring peak period congestion on weekends and holidays during winter and summer peak recreational travel seasons. This 45-mile, four-lane section of I-70 is the primary access route from the Denver Metro Area to the mountains of central Colorado, where there are numerous opportunities for outdoor activities, such as skiing in the winter and camping, hiking, biking, and sightseeing in the summer and fall. Consequently, this corridor experiences heavy flows of eastbound and westbound traffic on **Friday afternoons** as well as on **Saturday and Sunday mornings** for both the summer and winter seasons. On Fridays traffic is the highest in the westbound direction and on Sundays traffic is highest in the eastbound direction. The majority of this congestion happens in the segment between Georgetown and the Floyd Hill area.

The I-70 PPSL project (“Project”) will utilize the shoulder to provide a third, eastbound travel lane during peak periods along the I-70 Mountain Corridor from US 40 at Empire Junction to the Twin Tunnels (see Figure 1). The peak period shoulder lane will serve as an extension to the third, eastbound lane that has recently been constructed through the Twin Tunnels, and that operates as a full-time tolled express lane.

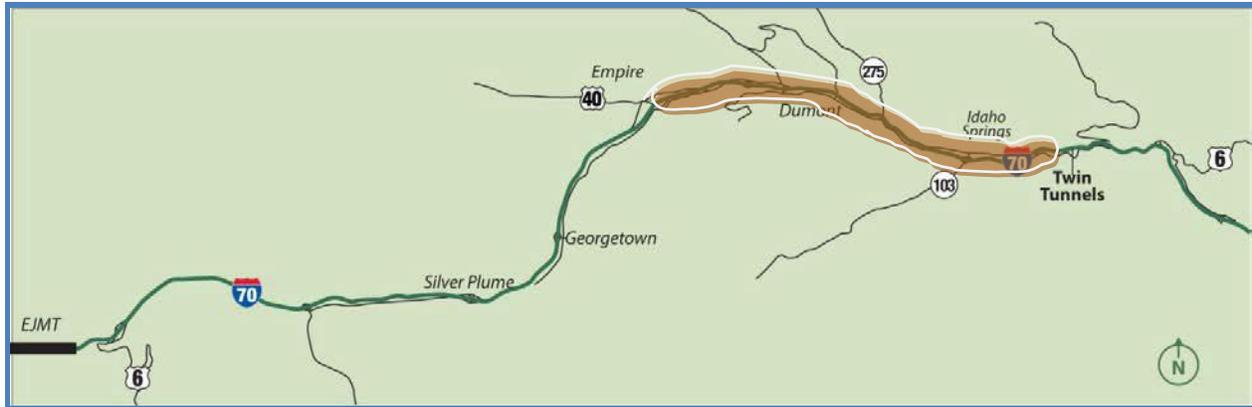


Figure 1: I-70 West Mountain Corridor and PPSL Project Limits

### 3. National Scan of Maximum Toll Rates per Mile

A national scan of maximum toll rates per mile was conducted to support the findings from this report (See Table 1 and Figure 2). The maximum toll rate per mile varies from \$0.10 (Utah) to \$1.40 (California). Applying that to the PPSL would result in a maximum toll rate for the trip ranging from \$1.00 to \$14.00 for the entire 10 miles.

Table 1: National Scan of Toll Rates per Mile, as of December 2014

State	Facility Name	Lane Type	Distance (mile)	Minimum Toll	Maximum Toll	Express Lane		
						Traditional Per Mile Avg	Max/mi	Per Mile Avg
California	South Bay Expressway	Toll	-		\$3.50	\$0.35	-	-
California	I-680 SB Express Lanes	Express Lane	14	\$0.30	\$7.50	-	\$0.54	-
California	I-10 Express Lanes	Express Lane	14	-		-	\$1.40	-
California	I-110 Express Lanes	Express Lane	11	-		-	\$1.40	-
California	I-15 Express Lanes	Express Lane	20	\$0.50	\$8.00	-	\$0.40	-
Colorado	I-25 Express	Express Lane	7	\$0.50	\$4.00	-	\$0.57	-
Delaware	Delaware DOT	Toll	multiple networks	\$0.25	\$4.00	\$0.04	-	-
Florida	FL Turnpike Mainline	Toll	265	\$0.50	\$25.00	\$0.55	-	-
Florida	I-95 Express	Express Lane	10	\$0.25	\$7.10	-	\$0.75	-
Florida	CFX "SR 408"	Toll	22	\$0.25	\$4.50	\$0.20	-	-
Florida	THEA Express Lanes	Toll	11	\$0.75	\$2.70	\$0.25	-	-
Georgia	SRTA I-85	Express Lane	16	\$0.16	\$7.00	-	\$0.44	-
Illinois	Illinois Tata Toll Highway Authority	Traditional	120	-	\$14.50	\$0.12	-	-
Indiana	Indiana Toll Road	Traditional	152	-	\$10.00	\$0.07	-	-
Kansas	Kansas Turnpike Authority	Traditional	232	\$0.30	\$10.75	\$0.05	-	-
Maine	Maine Turnpike Authority	Toll	multiple networks	\$0.00	\$3.00	\$0.08	-	-
Maryland	I95 Express Lanes	Express Lane	7	\$0.70	\$1.75	-	\$0.25	-
Massachusetts	Mass DOT	Toll	135	\$0.45	\$10.60	\$0.08	-	-
Minnesota	I-35 W Express Lanes	Express Lane	16	\$0.25	\$8.00	-	\$0.50	-
Minnesota	I-394 Express Lanes	Express Lane	11	\$0.25	\$9.00	-	\$0.82	-
North Carolina	NCTA	Toll	15	\$0.30	\$2.20	\$0.15	-	-
Ohio	Ohio Turnpike	Toll	237	-	\$17.00	\$0.07	-	-
Oklahoma	Oklahoma Turnpike Authority	Toll	multiple networks	\$0.25	\$4.00	\$0.05	-	-
Pennsylvania	Pennsylvania Turnpike	Toll	357	\$1.00	\$43.90	\$0.12	-	-
Texas	IH 45 South	Express Lane	15.5	\$1.00	\$10.00	-	\$0.65	\$0.12
Texas	IH 45 N (North Freeway)	Express Lane	20.6	\$1.00	\$10.00	-	\$0.49	\$0.06
Texas	Katy Managed Lanes	Express Lane	12	\$1.00	\$4.00	-	\$0.33	-
Texas	US 59 North (Eastex Freeway)	Express Lane	20	\$1.00	\$10.00	-	\$0.50	\$0.17
Utah	I-15 Hot Lanes	Express Lane	40	\$1.00	\$4.00	-	\$0.10	-
Virginia	I-495 Express Lanes	Express Lane	14	-	\$4.80	-	\$1.25	-
Washington	SR 167 HOT Lanes	Express Lane	9	\$0.50	\$9.00	-	\$1.00	-

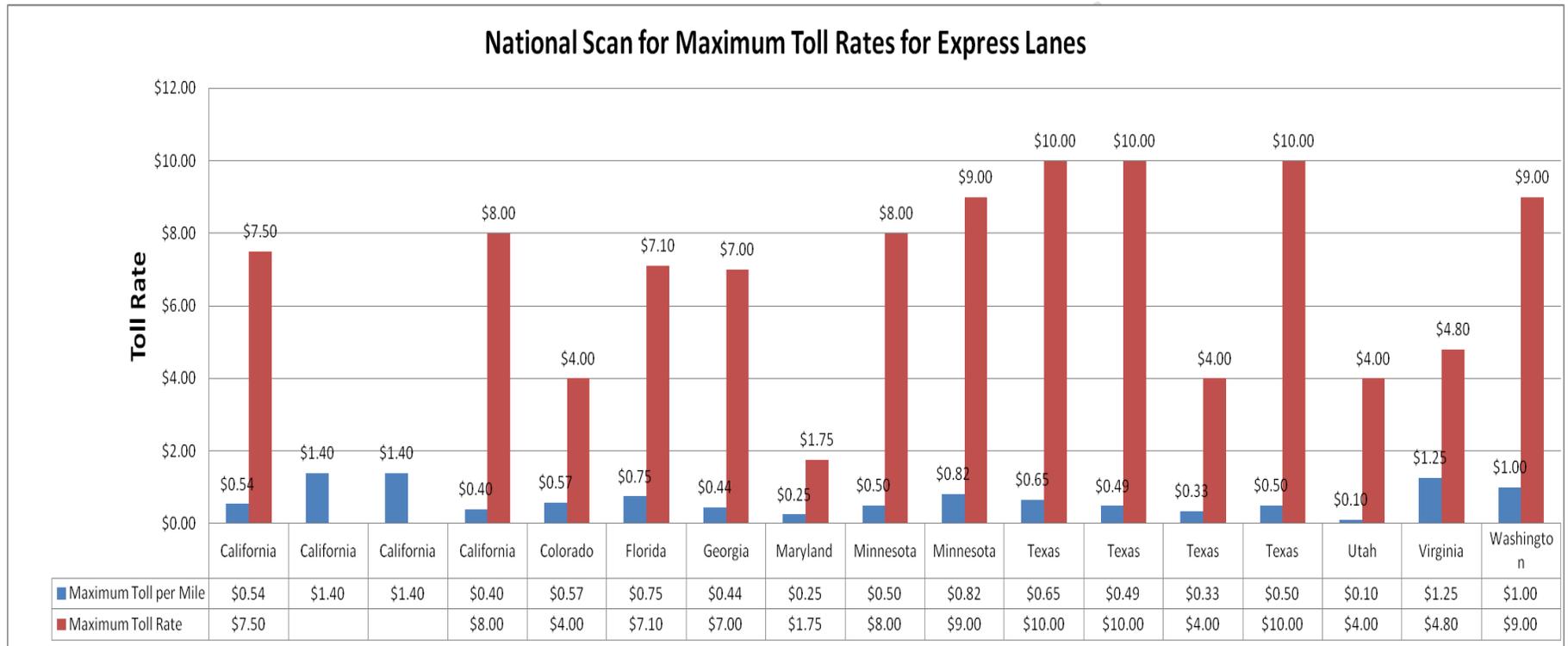


Figure 2: National Scan of Toll Rates per Mile (Blue) and Cumulative Toll Rates (Red) [As of December 2014]

## 4. DynusT Traffic Model

The traffic model for the future peak day 2015 was evaluated. The capabilities of DynusT traffic modeling software, combined with the congestion pricing function, resulted in eastbound I-70 traffic being assigned between the two general purpose lanes and the PPSL. Figure 3 below represents the traffic volume in the PPSL for different minimum toll rates. Figure 4 shows the net revenue (after toll collection cost) for different minimum toll rates.

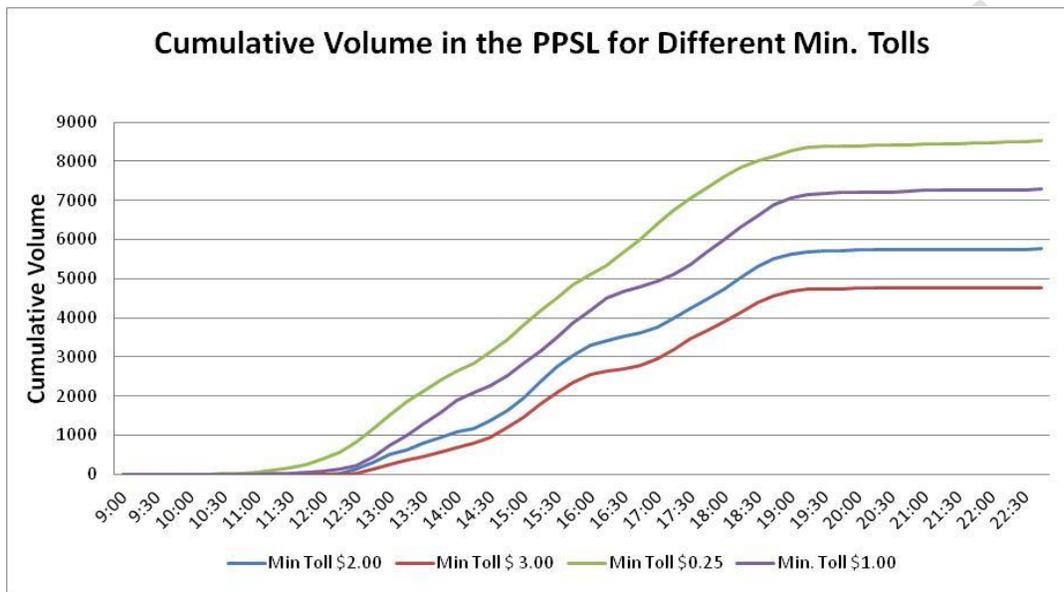


Figure 3: PPSL Cumulative Volumes for Peak Day, 2015

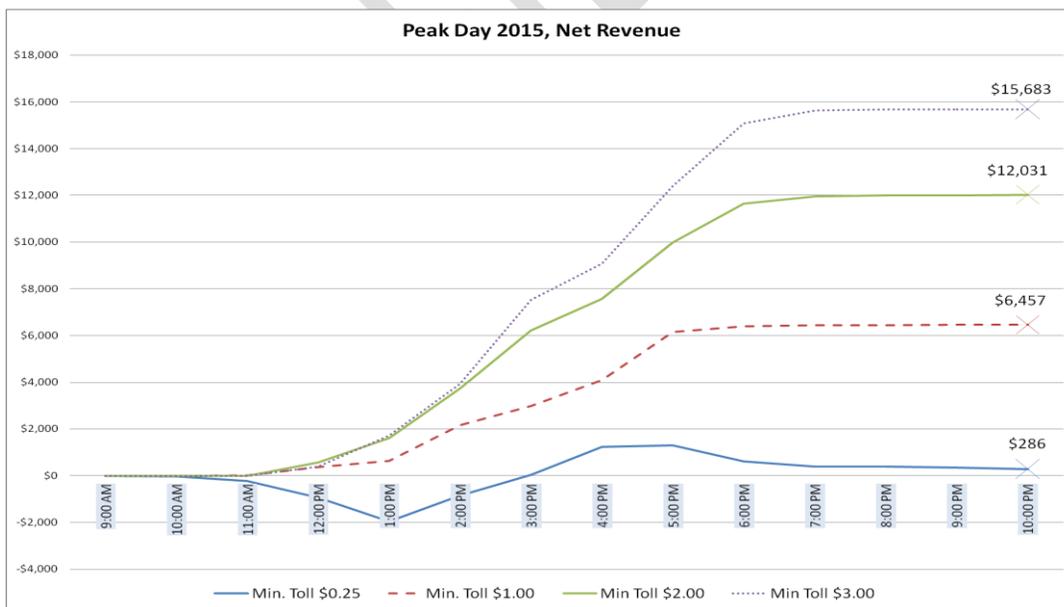


Figure 4: PPSL Cumulative Net Revenue for Peak Day, 2015 (toll collection cost at 84 cents per trip)

## 5. PPSL Toll Rates Recommendations

Based on the traffic model and analyses conducted, the following table presents the recommended minimum and maximum toll rates for different times of day. ExpressToll refers to transponder rates and license plate tolling reflects transponder rates plus a surcharge resulting from additional back office cost.

**Table 3:** Recommended toll rates for the PPSL

From	To	ExpressToll		License Plate Tolling	
		MIN	MAX	MIN	MAX
9:00 AM	12:15 PM	\$ 3.00	\$ 12.00	\$ 4.32	\$ 13.32
12:15 PM	2:15 PM	\$ 3.50	\$ 14.00	\$ 4.82	\$ 15.32
2:15 PM	5:00 PM	\$ 4.50	\$ 14.00	\$ 5.82	\$ 15.32
5:00 PM	6:15 PM	\$ 6.00	\$ 14.00	\$ 7.32	\$ 15.32
6:15 PM	11:00 PM	\$ 3.00	\$ 12.00	\$ 4.32	\$ 13.32

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